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CLAIMS:

1. (Previously Presented) A method for datagram staggering in a communication system, comprising:

receiving samples of a first input signal over a first communication channel and a second input signal over a second communication channel, the first input signal corresponding to a first communication device, the second input signal corresponding to a second communication device;

generating a first plurality of datagrams containing at least a portion of the samples of the first input signal; and

generating a second datagram containing at least a portion of the samples of the second input signal, the second datagram is staggered from each of the first plurality of datagrams such that the second datagram is ready for communication at a different time than any of the first plurality of datagrams, wherein generating the second datagram comprises:

starting a timer at or near a time when one of the first plurality of datagrams is ready for communication, wherein the timer is started by an interrupt associated with the first communication channel; and

establishing the second communication channel at or near a time when the timer elapses, wherein the second communication channel is established in response to a timer completion interrupt signal.

2. (Previously Presented) The method of Claim 1, wherein generating the second datagram such that the second datagram is staggered from each of the first plurality of datagrams comprises staggering the second datagram from at least one of the first plurality of datagrams by a predetermined amount of time, the predetermined amount of time is approximately equal to a communication time of one of the first plurality of datagrams.

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Original) The method of Claim 1, wherein receiving samples of a first input signal and a second input signal comprises receiving the samples over a bus, the bus operable to support communication over a plurality of communication channels.

9. (Original) The method of Claim 8, wherein the bus comprises a plurality of windows; and

further comprising establishing an active channel using one of the windows at or near a time when one of the communication devices becomes active.

10. (Original) The method of Claim 9, wherein a first active channel uses a first window of the bus; and

wherein another active channel uses a first available window following an occupied window of the bus.

11. (Original) The method of Claim 10, wherein the other active channel is established at or near a time when a timer elapses.

12. (Original) The method of Claim 1, further comprising generating the samples of the first and second input signals.

13. (Original) The method of Claim 12, wherein generating the samples of the first and second input signals comprises generating the samples of the first and second input signals using different compression methods.

14. (Original) The method of Claim 1, wherein each of the datagrams comprises an Asynchronous Transfer Mode (ATM) cell containing a predetermined number of samples.

15. (Previously Presented) A system for datagram staggering in a communication system, comprising:

at least one computer readable medium; and

software encoded on the computer readable medium, the software operable when executed to:

receive samples of a first input signal over a first communication channel and a second input signal over a second communication channel, the first input signal corresponding to a first communication device, the second input signal corresponding to a second communication device;

generate a first plurality of datagrams containing at least a portion of the samples of the first input signal; and

generate a second datagram containing at least a portion of the samples of the second input signal, the second datagram is staggered from each of the first plurality of datagrams such that the second datagram is ready for communication at a different time than any of the first plurality of datagrams, wherein the software generates the second datagram by:

starting a timer at or near a time when one of the first plurality of datagrams is ready for communication, wherein the timer is started by an interrupt associated with the first communication channel; and

establishing the second communication channel at or near a time when the timer elapses, wherein the second communication channel is established in response to a timer completion interrupt signal.

16. (Previously Presented) The system of Claim 15, wherein the software is operable to generate the second datagram such that the second datagram is staggered from each of the first plurality of datagrams by staggering the second datagram from at least one of the first plurality of datagrams by a predetermined amount of time, the predetermined amount of time is approximately equal to a communication time of one of the first plurality of datagrams.

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Original) The system of Claim 15, wherein the software is operable to receive samples of the first and second input signals over a bus, the bus operable to support communication over a plurality of communication channels.

23. (Original) The system of Claim 22, wherein the bus comprises a plurality of windows; and

wherein the software is further operable to establish an active channel using one of the windows at or near a time when one of the communication devices becomes active.

24. (Original) The system of Claim 23, wherein a first active channel uses a first window of the bus; and

wherein another active channel uses a first available window following an occupied window of the bus.

25. (Original) The system of Claim 24, wherein the software is operable to establish the other active channel at or near a time when a timer elapses.

26. (Original) The system of Claim 15, wherein the samples of the first and second input signals are generated using different compression methods.

27. (Original) The system of Claim 15, wherein each of the datagrams comprises an Asynchronous Transfer Mode (ATM) cell containing a predetermined number of samples.

28. (Previously Presented) A modem, comprising:

a memory operable to receive and store at least a portion of samples of a first input signal over a first communication channel and a second input signal over a second communication channel, the first input signal corresponding to a first communication device, the second input signal corresponding to a second communication device; and

a processor coupled to the memory, the processor operable to:

receive the samples from the memory;

generate a first plurality of datagrams containing at least a portion of the samples of the first input signal; and

generate a second datagram containing at least a portion of the samples of the second input signal, the second datagram is staggered from each of the first plurality of

datagrams such that the second datagram is ready for communication at a different time than any of the first plurality of datagrams, wherein the processor generates the second datagram by:

starting a timer at or near a time when one of the first plurality of datagrams is ready for communication, wherein the timer is started by an interrupt associated with the first communication channel; and

establishing the second communication channel at or near a time when the timer elapses, wherein the second communication channel is established in response to a timer completion interrupt signal.

29. (Previously Presented) The modem of Claim 28, wherein the processor is operable to generate the second datagram such that the second datagram is staggered from each of the first plurality of datagrams by staggering the second datagram from at least one of the first plurality of datagrams by a predetermined amount of time, the predetermined amount of time is approximately equal to a communication time of one of the first plurality of datagrams.

30. (Original) The modem of Claim 28, wherein the memory comprises a first buffer corresponding to the first communication device and a second buffer corresponding to the second communication device.

31. (Cancelled)

32. (Cancelled)

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Original) The modem of Claim 28, wherein the memory is operable to receive the samples over a bus, the bus operable to support communication over a plurality of channels.

37. (Original) The modem of Claim 36, wherein the bus comprises a plurality of windows; and

wherein the processor is operable to establish an active channel using one of the windows at or near a time when one of the communication devices becomes active.

38. (Original) The modem of Claim 37, wherein a first active channel uses a first window of the bus; and

wherein another active channel uses a first available window following an occupied window of the bus.

39. (Original) The modem of Claim 38, wherein the other active channel is established at or near a time when a timer elapses.

40. (Original) The modem of Claim 28, wherein the first and second input signals are generated using different compression methods.

41. (Original) The modem of Claim 28, wherein each of the datagrams comprises an Asynchronous Transfer Mode (ATM) cell containing a predetermined number of samples.

42. (Previously Presented) A method for datagram staggering in a communication system, comprising:

receiving samples of a first input signal and a second input signal, the first input signal corresponding to a first communication device, the second input signal corresponding to a second communication device;

generating one of a first plurality of datagrams containing at least a portion of the samples of the first input signal at or near a time when a first threshold number of samples of the first input signal are received; and

generating a second datagram containing at least a portion of the samples of the second input signal at or near a time when a second threshold number of samples of the second input signal are received, the second datagram is staggered from each of the first plurality of datagrams such that the second datagram is ready for communication at a different time than any of the first plurality of datagrams, wherein generating the second datagram comprises:

determining a first value for the second threshold number of samples;

receiving a number of samples of the second input signal, the number of samples approximately equal to the first value of the second threshold number;

discarding the received samples; and

determining a second value for the second threshold number of samples.

43. (Previously Presented) A system for datagram staggering in a communication system, comprising:

at least one computer readable medium; and

software encoded on the computer readable medium, the software operable when executed to:

receive samples of a first input signal and a second input signal, the first input signal corresponding to a first communication device, the second input signal corresponding to a second communication device;

generate one of a first plurality of datagrams containing at least a portion of the samples of the first input signal at or near a time when a first threshold number of samples of the first input signal are received; and

generate a second datagram containing at least a portion of the samples of the second input signal at or near a time when a second threshold number of samples of the second input signal are received, the second datagram is staggered from each of the first plurality of datagrams such that the second datagram is ready for communication at a different time than any of the first plurality of datagrams, wherein the software generates the second datagram by:

determining a first value for the second threshold number of samples;

receiving a number of samples of the second input signal, the number of samples approximately equal to the first value of the second threshold number;

discarding the received samples; and

determining a second value for the second threshold number of samples.

44. (Previously Presented) A modem, comprising:

a memory operable to receive and store at least a portion of samples of a first input signal and a second input signal, the first input signal corresponding to a first communication device, the second input signal corresponding to a second communication device; and

a processor coupled to the memory, the processor operable to:

receive the samples from the memory;

generate one of a first plurality of datagrams containing at least a portion of the samples of the first input signal at or near a time when a first threshold number of samples of the first input signal are received; and

generate a second datagram containing at least a portion of the samples of the second input signal at or near a time when a second threshold number of samples of the second input signal are received, the second datagram is staggered from each of the first plurality of

datagrams such that the second datagram is ready for communication at a different time than any of the first plurality of datagrams, wherein the processor generates the second datagram by:

determining a first value for the second threshold number of samples;

receiving a number of samples of the second input signal, the number of samples approximately equal to the first value of the second threshold number;

discarding the received samples; and

determining a second value for the second threshold number of samples.